

Boost Free Lessons - Year 9 Maths

Lesson 4: Expanding and Simplifying

Name: _____ Grade: _____ Date: _____

Worked Example 1

Expand and simplify $3(2x + 5) - 4(x - 3)$

1. Expand the first bracket: $3 \times 2x = 6x$ and $3 \times 5 = 15$.
2. Expand the second, watching the negative: $-4 \times x = -4x$ and $-4 \times -3 = +12$.
3. Write it out in full: $6x + 15 - 4x + 12$.
4. Collect like terms: $6x - 4x = 2x$, and $15 + 12 = 27$.

$= 2x + 27$

Worked Example 2

Expand and simplify $2a(3a - 4) + a(a + 8)$

1. Expand the first bracket: $2a \times 3a = 6a^2$ and $2a \times -4 = -8a$.
2. Expand the second: $a \times a = a^2$ and $a \times 8 = 8a$.
3. Write it out: $6a^2 - 8a + a^2 + 8a$.
4. Collect like terms: $6a^2 + a^2 = 7a^2$, and $-8a + 8a = 0$.

$= 7a^2$

Remember: The term outside multiplies every term inside. A minus outside the bracket flips the sign of every term inside it.



Question 1: Expand the following.

1. $2(x + 7)$

2. $5(3y - 2)$

3. $-3(a + 4)$

4. $x(x + 6)$

5. $4m(m - 2)$

6. $-2(3k - 5)$

7. $3p(2p + 1)$

8. $-(t - 9)$

9. $5c(c + 3)$

10. $-4(2w + 3)$



Question 2: Expand and simplify the following.

1. $2(x + 3) + 4(x - 1)$

2. $5(m - 2) - 3(m + 4)$

3. $3(2y + 1) - 2(y - 5)$

4. $x(x + 4) + 2(x + 6)$

5. $4a(a - 1) - 2a(a + 3)$

6. $6(k + 2) - (2k - 5)$

7. $2t(t + 5) + 3t(t - 2)$

8. $-3(p - 4) - 2(p + 1)$



Question 3: Answer the following questions.

1. A rectangle has length $(x + 5)$ and width x . Write an expression for its area and expand it.
2. Expand and simplify $3(2x - 1) + 2(x + 4)$.
3. Expand and simplify $a(a + 3) - a(a - 3)$.
4. A square has side $(2x + 1)$. Write an expression for its perimeter and simplify it.
5. Expand and simplify $5(y + 2) - 5(y - 2)$.





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Answers: Expanding and Simplifying

Question 1

- | | |
|----------------|-----------------|
| 1. $2x + 14$ | 6. $-6k + 10$ |
| 2. $15y - 10$ | 7. $6p^2 + 3p$ |
| 3. $-3a - 12$ | 8. $-t + 9$ |
| 4. $x^2 + 6x$ | 9. $5c^2 + 15c$ |
| 5. $4m^2 - 8m$ | 10. $-8w - 12$ |

Question 2

- | | |
|--------------------|-----------------|
| 1. $6x + 2$ | 5. $2a^2 - 10a$ |
| 2. $2m - 22$ | 6. $4k + 17$ |
| 3. $4y + 13$ | 7. $5t^2 + 4t$ |
| 4. $x^2 + 6x + 12$ | 8. $-5p + 10$ |

Question 3

1. $x(x + 5) = x^2 + 5x$
2. $8x + 5$
3. $6a$
4. $4(2x + 1) = 8x + 4$
5. 20

